Lenovo servers provide an open and flexible foundation for data center initiatives

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Introduction

Cloud, analytics, mobility and other emerging IT initiatives create a challenging set of demands for worldwide data centers, and IT organizations are increasingly opting for x86 servers over proprietary systems to enable more efficient workload management and infrastructure consolidation. The x86 architecture has emerged as the standard server architecture due to its economic advantages, openness and flexibility compared with proprietary systems, resulting in x86 servers accounting for 85% of worldwide server sales, according to TBR estimates.

Customers are deploying x86 servers for their cloud, analytics and mobile computing initiatives.

To accelerate business benefits such as lower TCO and increased productivity, customers increasingly seek software-centric, industry-standard server hardware that can be integrated easily with their infrastructure and familiar management tools. Using deployed software assets minimizes customization, reduces complexity and improves overall productivity. Furthermore, automation can help customers achieve these benefits by allowing IT staff to focus on business-critical initiatives.

Lenovo emerged as a top x86 server vendor following its purchase of IBM's x86 business in October 2014. Amid continued cloud-, mobile- and analytics-driven changes and intense competition in the global data center market, the vendor's advancements around the openness and flexibility of its server portfolio are resonating well with its customers. By ensuring its server portfolio integrates with heterogeneous data center environments effectively, Lenovo provides a strong value proposition to customers that want to use their own management tools and software assets. Furthermore, Lenovo demonstrates the advantages of its economies of scale by streamlining manufacturing costs and passing the savings to customers as well as reinvesting cost savings in R&D initiatives.

Customers require fast, flexible platforms to speed their business initiatives

In recent years technology became a critical enabler of business transformation and growth by helping customers gain competitive advantages such as increased agility, faster time to market and improved customer service. Over the same period, x86 server technology has evolved to provide the cost, choice, compatibility, flexibility and future-proofing advantages customers require to meet business goals.

As customers deploy x86-based solutions for a growing variety of use cases, server vendors with broad portfolios are best-equipped to address customers' IT requirements. Lenovo's extensive server portfolio, including versatile rack and tower servers, mission-critical rack servers, blade servers and high-density servers, is capable of addressing the needs of SMB organizations, large enterprises and service providers.

Lenovo's 1- and 2-socket rack and tower servers are commonly used for applications such as file, print, email, Web serving, analytics and cloud-native workloads, while Lenovo's 4- and 8-socket mission-critical systems are used for higher-end, scale-up and data-intensive workloads. Lenovo's high-density servers, including NeXtScale, are well-suited for HPC workloads and large scale-out environments where space and energy efficiencies are needed, while Flex System blade servers serve use cases such as cloud computing, mission-critical database and in-memory applications.

Lenovo continues to enhance its x86 server portfolio through portfolio investments and alliances to provide more choices and flexibility for customers. This strategy aligns with industry demand, where customers value server vendors that have broad x86 server portfolios and offer flexible configurations to best meet their unique IT requirements.

Open industry standards help customers address increased complexity in their IT environments

Data center customers grapple with rising IT complexity due to the emergence of cloud computing, analytics and mobility trends. In turn, these customers tend to deploy various infrastructure products to meet a range of requirements, which ultimately leads to multivendor environments. Interoperability helps customers mitigate IT complexity in these multivendor, heterogeneous environments and gives customers greater control over their infrastructure by easing the integration of new components.

Lenovo uses an open standards-based approach to ensure interoperability for its portfolio and enable customers to maximize the value of their IT investments. The company is on the board of directors of the Distributed Management Task Force (DMTF) and has a long history of developing, adopting and supporting industry standards by participating in DMTF working groups and committees. This helps Lenovo customers easily integrate its data center hardware into their environments without any proprietary interfaces or management tools.

Open industry standards provide many benefits for customers and will remain critical to the global IT market. Customers that follow open standards have a reduced risk of vendor lock-in, as specifications are known and open, and benefit from improved interoperability. TBR believes server vendors that help develop open standards will be best-able to provide these key benefits to customers.

Customers seek flexible infrastructure that integrates well within their environments

Vendors that enable highly agile, software-defined environments best meet the requirements of modern IT initiatives that can be challenging to manage with high levels of efficiency. With an increasing number of customers managing heterogeneous environments, there is rising demand to use customers' software tools, regardless of vendor, to manage their infrastructures. As a result, server vendors offering hardware that can be easily integrated with software tools from vendors such as Microsoft, Red Hat, VMware and IBM are best-positioned to meet customers' server requirements.

Customers are increasingly leveraging higher-level automation and orchestration tools to increase IT agility and scale.

The feature set of Lenovo's XClarity™ system management solution maps well to shifts in the server market toward openness and flexibility, and eases the integration of Lenovo's servers into customers' environments. The vendor offers multiple versions of XClarity™, which further demonstrates its commitment to providing choices and flexibility. XClarity™ integrates with Lenovo's System x M5 and X6 rack servers and Flex System converged infrastructure products. The vendor has a well-defined road map for extending the integration of XClarity™ across its server portfolio, with plans to add support for its ThinkServer product lines.

Lenovo's XClarity™ systems management solution provides an array of management services such as automated discovery, monitoring and alert handling, firmware updates, configuration management, and deployment of operating systems and hypervisors. The offering includes a graphical user interface, but customers can also leverage management tools such as VMware vCenter or Microsoft System Center to manage Lenovo servers. Additionally, the integration of System x hardware with higher-level automation and orchestration tools from leading software providers enables customers to simplify firmware updates, configuration patterns, maintenance and other areas to improve IT agility and visibility.

Customers use automation to replicate day-to-day tasks that historically required oversight by an IT administrator, such as creating, cloning or deploying hardware profiles. This helps to eliminate the chance of user errors and enables IT staff to focus on business-critical initiatives. The company offers enhanced automation and management in addition to XClarity™ through two methods: Representational State Transfer (REST) application programming interfaces (APIs) and Windows PowerShell "cmdlets."

REST APIs enable customers to easily integrate Lenovo servers with their existing higher-level cloud orchestration and management tools to improve visibility, deployment and control over their hardware resources. Lenovo offers more than 60 Windows PowerShell cmdlets, which are Microsoft .NET programs, for a variety of functions such as logging into Lenovo XClarity™ Administrator, managing user accounts, managing servers and deploying an operating system image to multiple servers. The company also provides XClarity Integrators for VMware vRealize Log Insight, Zenoss Service Dynamics and Splunk Enterprise, helping data centers consolidate operations management across their heterogeneous environments.

Customers receive more value from server vendors with broad software partner ecosystems

Server vendors with broad ecosystems of software partners are best-positioned to meet customers' unique IT requirements. While some vendors bundle their software products along with server sales, vendors that partner for software capabilities provide strong value by enabling customers to choose the software that best fits their needs, regardless of the supplier.

Lenovo demonstrates its open and flexible data center strategy with its software-agnostic approach to infrastructure management software. As a result, the company focuses software development efforts on products that enable its servers to integrate well with customers' environments. This lack of a proprietary, locked-in software approach allows Lenovo to deliver a strong value proposition to customers that want to use their software assets or software from Lenovo's partner network.

Lenovo employs a software-agnostic approach, partnering with leading software vendors such as VMware, Microsoft, Red Hat and Oracle.

Lenovo's partner-led software strategy provides customers multiple choices from leading ISVs such as VMware, Microsoft, Red Hat, SUSE, SAP, Oracle and IBM. This strategy maps well to customer demand for open and flexible solutions and will enable Lenovo customers to maximize the value of their software investments. The company's use of a partner-centric software approach will continue to ensure its hardware integrates well with leading third-party software, helping to differentiate Lenovo from other x86 server vendors.

Lenovo x86 servers meet customers' security and reliability pain points

The shift of mission-critical workloads to x86 servers will accelerate, and the variety and volume of cyberattacks on these environments will continue to grow. As a result of these trends, security and reliability will remain vital to customers. Vendors that provide preintegrated security and reliability features to augment customers' security technologies will ensure optimal levels of uptime and provide strong value as x86 servers are increasingly used for mission-critical workloads.

Lenovo preintegrates security and reliability features into its server portfolio to help customers achieve continuous server uptime.

Lenovo includes security in its server portfolio through Lenovo Trusted Platform Assurance (TPA), a set of security features and practices that help protect data centers from cyberattacks and minimize risk for its customers. Lenovo TPA protects the server firmware and management engine from cyberattacks by ensuring only digitally signed source code is loaded and boots. The company also includes features in XClarity™ to simplify management of certain security tasks. For example, customers can use Microsoft Active Directory server to verify XClarity™ users, and XClarity™ implements Perfect Forward Secrecy (PFS) to generate random keys per session and a tamper-proof audit log of user actions. TBR believes the integration of security features into the hardware level allows Lenovo to provide greater protection and mitigate customers' security concerns as they transition mission-critical workloads onto x86-based solutions.

Reliability, Availability and Serviceability (RAS) features are also important to customers, particularly as the use of x86-based solutions for mission-critical workloads becomes more common. Lenovo servers include RAS features, including predictive failure analysis and light path diagnostics to detect issues quickly and reduce maintenance

times and costs by eliminating unnecessary replacement parts. XClarity^{TM} also helps ensure continuous uptime during rolling server reboots, firmware updates or predicted hardware failures through features such as dynamic workload relocation.

Purchase price and total cost of ownership are also key factors in purchase decisions for potential x86 server customers. Lenovo continually provides economical pricing and effective TCO with its low-priced, secure and reliable x86 server hardware. Since its purchase of IBM's x86 business, Lenovo has used its economies of scale advantages to streamline manufacturing costs and reduce server pricing as well as reinvest cost savings in its R&D initiatives.

Conclusion

The emergence of cloud, analytics and mobility will continue to create IT pain points for customers, including inevitable complexity, cost and interoperability challenges. Server vendors that provide open and flexible data center hardware are best-positioned to mitigate IT complexity and integration challenges in multivendor, heterogeneous environments, which are becoming increasingly common.

TBR believes Lenovo is well-positioned to address customers' pain points around IT agility and complexity through portfolio investments in products such as XClarity^{TM} that enable the vendor's server hardware to be easily integrated, as well as its partner-centric software strategy to provide greater choices for customers. Furthermore, Lenovo's efforts around open standards, interoperability, security and RAS will also help the company solve customers' IT pain points by reducing complexity and easing integration for its servers.

Lenovo is cultivating a strong value proposition through aggressive pricing and by ensuring its systems integrate well in customers' heterogeneous environments. Lenovo has the portfolio pieces to address demand from SMBs to large enterprise and service provider customers. Furthermore, Lenovo has a well-defined road map for the continued extension of the integration and interoperability of its servers, such as its plans to add support for its ThinkServer product lines in XClarity^{TM}. TBR believes these factors will enable Lenovo to continue to help customers solve business and IT pain points, drive productivity and improve efficiency.

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